

ATTACHMENT 16

PI ARCHIVING SYSTEM

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PI Archiving System

The PI (Plant Information) System by Oil Systems Inc. is used for recording the parameters monitored by the plant control system and for doing certain calculations. The following briefly describes the operation of the PI system and, for the required tags, specifies the values that will be set for the applicable user defined specifications.

Each point is evaluated by the control system (WDPF) once every second. These values are used by the WDPF for control and interlocks. These values are also passed on to the PI system. The PI system records the monitored data according the compression schemes set up in the system. In some cases, PI also performs calculations and passes values back to the WDPF to be used for control and interlocks.

Data retrieved from the WDPF passes through two data compression schemes. The first one, called Exception Reporting, filters the data for use throughout the PI system. Any value passed through the Exception Reporting filter would be available for use in the Performance Equations, the Alarm Package, and Data Archiving. The second scheme is called Compression Reporting and is used only by the Data Archiving program. Exception Reporting is used to regulate the computing load on the system by only passing values which would be significant to the process being monitored and allow a larger number of points to be monitored within the system. Compression Reporting is used to provide efficient data storage and not fill the data file with large numbers of values which are not significant to the process.

Both Exception Reporting and Compression Reporting incorporate a user-defined specification consisting of a Minimum Time, a Maximum Time, and a Deviation. For both Exception Reporting and Compression Reporting, the Minimum Time and Maximum Time work the same. The Minimum Time specification requires that at least that amount of time has passed since the previously used value before considering the Deviation specification. A specification of zero for the Minimum time would indicate that every value would pass through the filter and be evaluated by the Deviation specification. The Minimum Time acts as a filter for "noisy" points. The Maximum Time requires that a new value be used regardless of the deviation after the amount of time specified since the previous value.

The Deviation is the amount that the point monitored must change before being passed into the system. The method used to implement this differs between Exception Reporting and Compression Reporting. Exception Deviation uses a straight deviation requirement such that if the value has changed from the previous value by more than the deviation amount it uses the new value. Compression Deviation uses a "Swinging Door" algorithm to further reduce the amount of data stored in the archive and save archive space. Simply stated, if a straight line drawn between the previous archive data point and the newest data point does not pass by all values in between within the deviation specification, then the previous value will be archived, since the line drawn between the two archive values must pass by all values passed into the system within the deviation specification.

If the Compression Reporting is off, each value passed through the Exception Reporting filter is archived.

There are three types of numbers used in the system: real, integer, and digital. For real numbers, in addition to compression, the Data Archive program also scales values prior to writing them to the archive. Scaling changes the point from a floating-point number to an integer scaled by the span of the point. The resolution of this process is 0.003% of the span of the point. In doing this, archive space is conserved since an integer is stored as a 16-bit number and a floating-point number is stored with 32 bits.

Integer numbers are stored as truncated 16 bit integers which could range from zero to 32767.

For digital points, any change in state is considered significant. Therefore, only the Minimum Time and Maximum Time specifications are used. Any Compression or Exception Deviation specification defined for the point is ignored. Each digital point is assigned a zero state and one additional state (span). The zero and span values for digital points are defined with a Digital Code Table.

There are four sources of data input for the system: WDPF (W), calculated (C), lab value or manual input (L), and totalizer (T). The latter three are generated within PI itself and bypass the Exception Reporting filter (i.e. all values are available for the Compression Reporting algorithm). The totalizer is an algorithm built into PI, therefore the Compression Reporting algorithm is not used.

For parameters which have a limit specified as a cumulative value such as pounds per hour or pounds per half hour, the value is calculated in PI as a cumulative weight that resets to zero at the top of each hour.

Each point is also assigned a resolution code which dictates how the time stamp associated with each value is recorded. There are four resolution codes, 1 through 4. For resolution codes 1 through 3, a time stamp is placed at the beginning of each record and the time stamp for each value in the record is recorded as an offset from the initial time stamp. Resolution code 1 has a one second resolution for the offset; resolution code 2 has a 0.1 minute (six second) resolution for the offset; and resolution code 3 has a one minute resolution for the offset. For resolution code 4, the actual time stamp is recorded with each value recorded. It has a resolution of one second.

The following table lists the parameters that will be monitored and recorded, the type, source, resolution code, and the applicable specifications that will be used in the data compression schemes.

tag name	Description	units	zero	span	type	source	res. code	comp. dev. (% of span)	comp. min time (sec)	comp. max time (sec)	comp.	exc. dev. (% of span)	exc. min time (sec)	exc. max time (sec)
AT2104	1st stage neut. feed pH (selected)	N/A	0	14.00	real	W	1	0.40	15	254	on	0.2	1	254
AT2104A	1st stage neut. feed pH A	N/A	0	14.00	real	W	1	0.70	15	254	on	0.2	1	254
AT2104B	1st stage neut. feed pH B	N/A	0	14.00	real	W	1	0.70	15	254	on	0.2	1	254
AT2104RL	1st stage neut. feed pH (HRA)	N/A	0	14.00	real	W	1	0.50	5	60	on	0.1	1	30
AT2129	2nd stage rundown pH (selected)	N/A	0	14.00	real	W	1	0.70	15	254	on	0.2	1	254
AT2129A	2nd stage rundown pH A	N/A	0	14.00	real	W	1	0.70	15	254	on	0.2	1	254
AT2129B	2nd stage rundown pH B	N/A	0	14.00	real	W	1	0.70	15	254	on	0.2	1	254
AT2129RL	2nd stage rundown pH (HRA)	N/A	0	14.00	real	W	1	0.50	5	60	on	0.1	1	30
AT2130	2nd stage neut. feed pH (selected)	N/A	0	14.00	real	W	1	0.70	15	254	on	0.2	1	254
AT2130A	2nd stage neut. feed pH A	N/A	0	14.00	real	W	1	0.70	15	254	on	0.2	1	254
AT2130B	2nd stage neut. feed pH B	N/A	0	14.00	real	W	1	0.70	15	254	on	0.2	1	254
AT2130RL	2nd stage neut. feed pH (HRA)	N/A	0	14.00	real	W	1	0.50	5	60	on	0.1	1	30
AT2199	stack CO (selected)	ppm	0	2000	real	W	1	0.10	1	254	on	0.03	1	254
AT2199A	stack CO -- CEM A (low)	ppm	0	200	real	W	1	0.50	1	254	on	0.1	1	254
AT2199B	stack CO -- CEM A (high)	ppm	0	2000	real	W	1	0.10	1	254	on	0.03	1	254
AT2199C	stack CO -- CEM B	ppm	0	2000	real	W	1	0.10	1	254	on	0.03	1	254
AT2199CR	corrected stack CO	ppm	0	6000	real	W	1	0.009	5	254	on	0.006	1	254
AT2207	stack THC (selected)	ppm	0	100	real	W	1	0.50	5	60	on	0.1	1	30
AT2207A	stack THC -- CEM A	ppm	0	100	real	W	1	0.50	5	60	on	0.1	1	30
AT2207B	stack THC -- CEM B	ppm	0	100	real	W	1	0.50	5	60	on	0.1	1	30
AT2207CR	corrected stack THC	ppm	0	1000	real	W	1	0.009	5	60	on	0.1	1	30
AT2200	stack O2 (selected)	%	0	100	real	W	1	0.20	1	254	on	0.10	1	254
AT2200A	stack O2 -- CEM A	%	0	100	real	W	1	0.50	15	254	on	0.10	1	254

tag name	Description	units	zero	span	type	source	res. code	comp. dev. (% of span)	comp. min time (sec)	comp. max time (sec)	comp.	exc. dev. (% of span)	exc. min time (sec)	exc. max time (sec)
AT2200B	stack O2 -- CEM B	%	0	25	real	W	1	0.50	15	254	on	0.10	1	254
AT2199RL	CO rolling average	ppm	0	1000	real	W	1	0.50	5	60	on	0.1	1	30
AT2207RL	THC rolling average	ppm	0	100	real	W	1	0.50	5	60	on	0.1	1	30
FT2201	CEM sample flow	l/hr	0	10.00	real	W	1	0.20	15	254	on	0.10	1	254
AT1010A	ABC O2 -- unit A	%	0	25	real	W	1	0.50	10	254	on	0.10	1	254
AT1010B	ABC O2 -- unit B	%	0	25	real	W	1	0.50	10	254	on	0.10	1	254
AT2020B	baghouse broken bag	%	0	100	real	W	2	0.50	0	1530	on	0.2	1	600
AIT3044	hydrocarbon vent O2	%	0	25	real	W	1	0.50	5	254	on	0.1	1	254
FT1121	A104 blend liquid flow	lb/min	0	400	real	W	1	0.25	15	254	on	0.10	1	254
FT1121RL	A104 blend liquid flow (HRA)	lb/hr	0	5000	real	W	1	0.50	5	60	on	0.1	1	30
A104WL1	A104 blend liquid waste enabled	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	1	14400
FT1131LB	A104 fuel oil flow	lb/min	0	100	real	W	1	0.50	10	254	on	0.10	1	254
FT1151	A102 aqueous liquid flow	lb/min	0	100	real	W	1	0.25	15	254	on	0.10	1	254
SV1150	A102 aqueous waste enabled	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	1	14400
FT1151RL	A102 aqueous liquid flow (HRA)	lb/hr	0	2000	real	W	1	0.50	5	60	on	0.1	1	30
FT1184	A106A blend liquid flow	lb/min	0	400	real	W	1	0.25	15	254	on	0.10	1	254
A106AWL1	A106A blend liquid waste enabled	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	1	14400
FT1194LB	A106A fuel oil flow	lb/min	0	100	real	W	1	0.50	10	254	on	0.10	1	254
FT1221	A106B blend liquid flow	lb/min	0	400	real	W	1	0.25	15	254	on	0.10	1	254
A106BWL1	A106B blend liquid waste enabled	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	1	14400
WT1102A	V1 station weigh scale A	lbs	0	500	real	W	1	0.50	5	1530	on	0.10	1	600
WT1102B	V1 station weigh scale B	lbs	0	100	real	W	1	0.50	5	1530	on	0.10	1	600
FT1102	V1 station feed rate	lb/min	0	1000	real	W	1	0.50	15	254	on	0.10	1	254
FQT1102	V1 station hourly total	lbs	0	1000	real	W	1	0.02	15	254	on	0.009	0	254

tag name	Description	units	zero	span	type	source	res. code	comp. dev. (% of span)	comp. min time (sec)	comp. max time (sec)	comp.	exc. dev. (% of span)	exc. min time (sec)	exc. max time (sec)
FT1102RL	V1 station feed fate (HRA)	lb/hr	0	1000	real	W	1	0.50	5	60	on	0.1	1	30
SV1103	V1 station block valve	N/A	close	open	digital	W	4	N/A	N/A	N/A	off	N/A	0	600
AT1122	V1 station LEL	%	0	100	real	W	1	0.50	15	254	on	0.10	1	254
FT1231LB	A106B fuel oil flow	lb/min	0	100	real	W	1	0.50	10	254	on	0.10	1	254
FT1253	A105A aqueous liquid flow	lb/min	0	200	real	W	1	0.50	15	254	on	0.10	1	254
SV1252	A105A aqueous waste enabled	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	1	14400
FT1263	A105B aqueous liquid flow	lb/min	0	200	real	W	1	0.50	15	254	on	0.10	1	254
SV1262	A105B aqueous waste enabled	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	1	14400
FT1270	ABC combined aqueous flow	lb/min	0	100	real	W	1	0.50	15	254	on	0.10	1	254
ABCAQTOT	ABC combined aqueous flow (HRA)	lb/hr	0	7500	real	W	1	0.50	5	60	on	0.1	1	30
FT1290	ABC combined blend flow	lb/min	0	100	real	W	1	0.25	15	254	on	0.10	1	254
ABCBLDTO	ABC combined blend flow (HRA)	lb/hr	0	5000	real	W	1	0.50	5	60	on	0.1	1	30
FT1171RL	A101 direct burn flow (HRA)	lb/hr	0	2000	real	W	2	0.50	5	60	on	0.1	1	30
FT1171	A101 direct burn flow	lbs/min	0	150	real	W	1	0.50	15	254	on	0.10	1	254
SV1170	A101 direct burn waste enabled	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	1	28800
FT4042	A103 sludge flow	lb/min	0	100	real	W	1	0.25	1	254	on	0.10	1	254
SLGONWST	A103 sludge system enabled	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	1	14400
FT4042RL	A103 sludge flow (HRA)	lb/hr	0	10000	real	W	2	0.50	5	60	on	0.1	1	30
FT3018	A103 drum direct burn flow	lb/min	0	100	real	W	1	0.25	1	254	on	0.10	1	254
AT3013	drum direct burn glove box LEL	%	0	100	real	W	1	0.50	15	254	on	0.10	1	254
TT3201	drum direct burn feed line temp	°F	0	200	real	W	1	0.50	5	254	on	0.10	1	254
WT1035RL	bulk solids feed rate (HRA)	lb/hr	0	21000	real	W	1	0.50	5	60	on	0.1	1	30
WT1029RL	containers feed rate (HRA)	lb/hr	0	21000	real	W	1	0.50	5	60	on	0.1	1	30

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BLKCONRL	bulk solids and containers feed rate (HRA)	lb/hr	0	21000	real	W	1	0.50	5	60	on	0.1	1	30
FIT1143	air to the kiln	acfm	0	13975	real	W	1	0.50	60	254	on	0.10	15	254
FIT1192	air to the north ABC	acfm	0	5030	real	W	1	0.50	60	254	on	0.10	15	254
FIT1247	air to the south ABC	acfm	0	5030	real	W	1	0.50	60	254	on	0.10	15	254
FIT1015	secondary combustion air flow	acfm	0	13975	real	W	1	0.50	60	254	on	0.10	15	254
FQT1250	total combustion air flow	acfm	0	20000	real	W	1	0.50	60	254	on	0.10	15	254
FS4097	bulk solids vent flow switch	N/A	off	on	digital	W	4	N/A	5	28800	on	N/A	0	1
HY4018	atmospheric air damper	%	0	100	real	W	1	0.10	1	254	on	0.05	1	254
AT4089	RobbeRoller suction LEL	%	0	100	real	W	1	0.50	15	254	on	0.10	1	254
SV4086	RobbeRoller suction valve	N/A	open	close	digital	W	4	N/A	1	28800	off	N/A	1	14400
HY4090	RobbeRoller dilution air valve	%	0	100	real	W	1	0.10	1	254	on	0.05	1	254
K407S	RobbeRoller dilution air fan	N/A	off	on	digital	W	4	N/A	1	14400	on	N/A	0	3600
LSH4099	RobbeRoller liquid trap high	N/A	off	on	digital	W	4	N/A	1	3600	off	N/A	0	600
SV4083	carbon bed A inlet damper	N/A	open	close	digital	W	4	N/A	1	28800	off	N/A	1	14400
SV4085	carbon bed B inlet damper	N/A	open	close	digital	W	4	N/A	1	28800	off	N/A	1	14400
FT2081A	saturator brine flow A	gpm	0	500	real	W	1	0.50	5	60	on	0.1	1	30
FT2081B	saturator brine flow B	gpm	0	500	real	W	1	0.50	5	254	on	0.10	1	254
FT2081	saturator brine flow (selected)	gpm	0	500	real	W	1	0.50	5	254	on	0.10	1	254
FT2081RL	saturator brine flow (HRA)	gpm	0	500	real	W	1	0.50	5	254	on	0.10	1	254
FT2092A	1st stage scrubber brine flow A	gpm	0	3000	real	W	1	0.50	15	254	on	0.10	1	254
FT2092B	1st stage scrubber brine flow B	gpm	0	3000	real	W	1	0.50	15	254	on	0.10	1	254
FT2092	1st stage scrubber brine flow (selected)	gpm	0	3000	real	W	1	0.50	5	60	on	0.1	1	30
FT2092RL	1st stage scrubber brine flow (HRA)	gpm	0	3000	real	W	1	0.50	15	254	on	0.10	1	254

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FT2095A	2nd stage scrubber brine flow A	gpm	0	3000	real	W	1	0.50	15	254	on	0.10	1	254
FT2095B	2nd stage scrubber brine flow B	gpm	0	3000	real	W	1	0.50	15	254	on	0.10	1	254
FT2095	2nd stage scrubber brine flow (selected)	gpm	0	3000	real	W	1	0.50	15	254	on	0.10	1	254
FT2095RL	2nd stage scrubber brine flow (HRA)	gpm	0	3000	real	W	1	0.50	5	60	on	0.1	1	30
FT2195	stack flow rate	acf m	0	80000	real	W	1	0.50	10	254	on	0.25	1	254
FT2195RL	stack flow rate (HRA)	acf m	0	80000	real	W	1	0.50	5	60	on	0.1	1	30
FT2195D	stack flow rate	dscfm	0	40000	real	W	1	0/50	10	254	on	0.25	1	254
FT2066	Carbon Inj Air Flow	FPM	0	125	real	W	1	0.25	1	254	on	0.10	1	254
FT2066A	Carbon Inj Air Flow Train 1	FPM	0	125	real	W	1	0.25	1	254	on	0.10	1	254
FT2066B	Carbon Inj Air Flow Train 3	FPM	0	125	real	W	1	0.25	1	254	on	0.10	1	254
FT2066FZ	Carbon Inj Air Flow 1min av	FPM	0	125	real	W	4	0.50	5	60	on	0.10	1	30
FT2066RL	Carbon Inj Air Flow HRA	FPM	0	125	real	W	1	0.25	1	254	on	0.10	1	254
WT2037	Carbon Injection Feed Rate	lbs/hr	0	100	real	W	1	0.50	15	254	on	0.10	5	254
WT2037A	Carbon Injection Rate Train 1	lbs/hr	0	100	real	W	1	0.50	15	254	on	0.10	5	254
WT2037B	Carbon Injection Rate Train 3	lbs/hr	0	100	real	W	1	0.50	15	254	on	0.10	5	254
WT2037FZ	Carbon Injection 1 Min Ave	lbs/hr	0	100	real	W	4	0.50	5	60	on	0.10	1	30
WT2037RL	Carbon Injection Rate, HRA	lbs/hr	0	100	real	W	1	0.50	5	60	on	0.10	1	30
LT3108	tank T301 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3118	tank T302 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3128	tank T303 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3138	tank T304 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3148	tank T305 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3158	tank T306 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3168	tank T307 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0

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LT3178	tank T308 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3188	tank T309 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3198	tank T310 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3208	tank T311 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3218	tank T312 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3278	tank T321 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3288	tank T322 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3258	tank T323 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT3268	tank T324 level	gals	0	30000	real	W	1	1.00	1	254	on	0	0	0
LT4023	tank T406 level	gals	0	6000	real	W	1	1.00	1	254	on	0	0	0
LT4030	tank T401 level	gals	0	35000	real	W	1	1.00	1	254	on	0	0	0
MI0006	north ABC waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
MI0007	south ABC waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
MI0009	solids and sludge waste feed cutoff	N/A	off	on	digital	W	4	N/A	1	3600	on	N/A	0	600
MI0010	total kiln waste feed cutoff	N/A	off	on	digital	W	4	N/A	1	3600	on	N/A	0	600
MI0015	total waste feed cutoff	N/A	off	on	digital	W	4	N/A	1	3600	on	N/A	0	600
MI0020	kiln blend waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
MI0021	north ABC blend waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
MI0022	south ABC blend waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
MI0023	direct burn waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
MI0024	north ABC aqueous waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
MI0025	south ABC aqueous waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
MI0026	barrel waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
MI0027	bulk solids waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600

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MI0028	sludge waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
MI0029	kiln aqueous waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
MI0030	V1 station AWFCO	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
ONWASTE	operating on waste	N/A	off	on	digital	W	4	N/A	1	3600	on	N/A	0	600
PIT1006A	ABC pressure A	" H ₂ O	-3.0	5.00	real	W	1	3.00	2	254	on	0.10	1	254
PIT1006B	ABC pressure B	" H ₂ O	-3.0	5.00	real	W	1	3.00	2	254	on	0.10	1	254
PIT1006C	ABC pressure C	" H ₂ O	-3.0	5.00	real	W	1	3.00	2	254	on	0.10	1	254
PIT1006	ABC pressure	" H ₂ O	-3.0	5.00	real	W	1	0.20	10	254	on	0	0	1
PIT2020A	baghouse inlet pressure	" H ₂ O	-20	20	real	W	1	1.00	10	254	on	0.10	1	254
PIT2020B	baghouse outlet pressure	" H ₂ O	-20	20	real	W	1	1.00	10	254	on	0.10	1	254
PDR2020	baghouse differential pressure	" H ₂ O	0	20.00	real	W	1	1.00	10	254	on	0.05	1	254
ZAL2021I	baghouse compartments on-line	N/A	onlin	bypass	digital	W	4	N/A	N/A	N/A	off	N/A	1	28800
PT2044	spray dryer top pressure	psi	0	1200	real	W	1	0.50	30	254	on	0.10	1	254
PT2045	spray dryer mid pressure	Psi	0	1200	real	W	1	0.50	30	254	on	0.10	1	254
PD2093AR	1st stage differential pressure (HRA)	" H ₂ O	0	20.00	real	W	1	0.50	5	60	on	0.1	1	30
PD2093BR	2nd stage differential pressure (HRA)	" H ₂ O	0	20.00	real	W	1	0.50	5	60	on	0.1	1	30
PDSL1124	kiln blend atomizing air Δp	N/A	off	on	digital	W	4	N/A	1	28800	on	N/A	15	600
PDSL1187	north ABC blend atomizing air Δp	N/A	off	on	digital	W	4	N/A	1	28800	on	N/A	15	600
PDSL1224	south ABC blend atomizing air Δp	N/A	off	on	digital	W	4	N/A	1	28800	on	N/A	15	600
PSL1156	kiln aqueous atomizing air pressure	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
PSL1107	V1 station N ₂ pressure switch	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
PSL1266	north ABC aqueous atomizing air pressure	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
PSL1256	south ABC aqueous atomizing air pressure	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600

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PSL1162	direct burn atomizing air pressure	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
PSL1153	sludge atomizing air pressure	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
PSL1157	kiln aqueous pressure at block valve	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
PSL1165B	north ABC aqueous press. at block valve	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
PSL1165C	south ABC aqueous press. at block valve	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
PSL1119A	kiln blend pressure at block valve	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
PSL1119B	north ABC blend pressure at block valve	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
PSL1196	south ABC blend pressure at block valve	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
TT1005A	kiln outlet temp pyrometer A	°F	300	2700	real	W	1	0.50	5	254	on	0.10	1	254
TT1005B	kiln outlet temp pyrometer B	°F	300	2700	real	W	1	0.50	5	254	on	0.10	1	254
TT1005C	kiln outlet temp pyrometer C	°F	300	2700	real	W	1	0.50	5	254	on	0.10	1	254
TT1005S	kiln outlet temp	°F	300	2700	real	W	1	0.50	5	254	on	0.10	1	254
TT1005RL	kiln outlet temp (HRA)	°F	300	2700	real	W	1	0.50	5	60	on	0.1	1	30
TT1009A	ABC outlet temp A	°F	0	2500	real	W	1	0.40	10	254	on	0.20	1	254
TT1009B	ABC outlet temp B	°F	0	2500	real	W	1	0.40	10	254	on	0.20	1	254
TT1009C	ABC outlet temp C	°F	0	2500	real	W	1	0.40	10	254	on	0.20	1	254
TT1009S	ABC outlet temp	°F	0	2500	real	W	1	0.40	10	254	on	0.20	1	254
TT1009RL	ABC outlet temp (HRA)	°F	0	2500	real	W	1	0.50	5	60	on	0.1	1	30
TT2001A	spray dryer outlet temp A	°F	0	1000	real	W	1	0.20	15	254	on	0.10	1	254
TT2001B	spray dryer outlet temp B	°F	0	1000	real	W	1	0.20	15	254	on	0.10	1	254
TT2001C	spray dryer outlet temp C	°F	0	1000	real	W	1	0.20	15	254	on	0.10	1	254
TT2001S	spray dryer outlet temp	°F	0	1000	real	W	1	0.20	15	254	on	0.10	1	254
TT2001RL	spray dryer outlet temp (HRA)	°F	0	1000	real	W	1	0.50	5	60	on	0.1	1	30
TT2082A	saturator temp A	°F	0	500	real	W	1	0.50	5	254	on	0.10	1	254

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TT2082B	saturator temp B	°F	0	500	real	W	1	0.50	5	254	on	0.10	1	254
TT2082C	saturator temp C	°F	0	500	real	W	1	0.50	5	254	on	0.10	1	254
TT2082S	saturator temp	°F	0	500	real	W	1	0.50	5	254	on	0.10	1	254
TT2194	stack temperature	°F	0	250	real	W	1	0.50	15	254	on	0.25	1	254
SV3954	primary canister valve	N/A	close	open	digital	W	4	N/A	N/A	N/A	off	N/A	0	600
SV3953	secondary canister valve	N/A	close	open	digital	W	4	N/A	1	28800	on	N/A	0	600
TMCARBA	carbon unit A timer	hours	0	1200	real	C	4	0.10	300	28800	on	0	1	1
TMCARBB	carbon unit B timer	hours	0	1200	real	C	4	2.0	5	28800	on	0	1	1
ST1003	kiln speed	rpm	0	1.00	real	W	1	1.0	15	254	on	0.50	1	254
PB0004	emergency stop button	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
PB0005	manual waste feed cutoff	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
ZSC1017	emergency hot vent	N/A	open	close	digital	W	4	N/A	1	86400	on	N/A	0	600
ZAL2021I	baghouse bypassed	N/A	onlin	bypass	digital	W	4	N/A	N/A	N/A	off	N/A	1	28800
UA0001	utility power failure alarm	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
WFTIMER	time on waste since WFCO test	Hours	0	200	real	W	3	1.00	1	15300	on	0	1	60
A104M	front wall BMS loss of flame	N/A	off	on	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
A106AM	north ABC BMS loss of flame	N/A	on	off	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
A106BM	south ABC BMS loss of flame	N/A	on	off	digital	W	4	N/A	N/A	N/A	off	N/A	15	600
KIL-BTU	kiln Btu per pound	Btu/lb	0	50000	real	L	4	N/A	N/A	N/A	off	0	0	600
ABN-BTU	north ABC blend Btu per pound	Btu/lb	0	50000	real	W	4	N/A	N/A	N/A	off	1.0	15	600
ABS-BTU	south ABC blend Btu per pound	Btu/lb	0	50000	real	W	4	N/A	N/A	N/A	off	1.0	15	600
AQU-BTU	aqueous Btu per pound	Btu/lb	0	50000	real	L	4	N/A	N/A	N/A	off	1.0	15	600
DDB-BTU	drum direct burn Btu per pound	Btu/lb	0	50000	real	W	4	N/A	N/A	N/A	off	1.0	15	600

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DIR-BTU	direct burn Btu per pound	Btu/lb	0	50000	real	L	4	N/A	N/A	N/A	off	1.0	15	600
KIL-VIS	kiln blend viscosity	cps	0	100	real	W	4	N/A	N/A	N/A	off	0	0	600
ABN-VIS	north ABC blend viscosity	cps	0	100	real	W	4	N/A	N/A	N/A	off	1.0	15	600
ABS-VIS	south ABC blend viscosity	cps	0	100	real	W	4	N/A	N/A	N/A	off	1.0	15	600
DIR-VIS	direct burn viscosity	cps	0	100	real	W	4	N/A	N/A	N/A	off	0	0	600
SLG-VIS	sludge viscosity	cps	0	20000	real	W	4	N/A	N/A	N/A	off	1.0	15	600
DDB-VIS	drum direct burn viscosity	cps	0	20000	real	W	4	N/A	N/A	N/A	off	1.0	15	600
KIL-SPGR	kiln blend specific gravity	N/A	0	10	real	L	4	N/A	N/A	N/A	off	0	0	600
ABN-SPGR	north ABC blend specific gravity	N/A	0	10	real	W	4	N/A	N/A	N/A	off	1.0	15	600
ABS-SPGR	south ABC blend specific gravity	N/A	0	10	real	W	4	N/A	N/A	N/A	off	1.0	15	600
CON-WGT	weight per container	lbs	0	1500	real	L	4	N/A	N/A	N/A	off	0	0	0
TOTBTURL	system heat release (HRA)	MM Btu/hr	0	250	real	W	3	0.50	5	60	on	0.1	1	30
TOTCLRL	total chlorine feed (HRA)	lb/hr	0	5000	real	W	3	0.50	5	60	on	0.1	1	30
CLRL12HR	total chlorine feed (12-hr RA)	lb/hr	0	5000	real	W	1	0.50	5	60	on	0.1	1	30
AS7	total cumulative arsenic feed	lbs	0	100	real	W	3	0.009	0	300	on	N/A	N/A	N/A
BE7	total cumulative beryllium feed	lbs	0	100	real	W	3	0.009	0	300	on	N/A	N/A	N/A
CD7	total cumulative cadmium feed	lbs	0	10	real	W	3	0.009	0	300	on	N/A	N/A	N/A
CR7	total cumulative chromium feed	lbs	0	300	real	W	3	0.009	0	300	on	N/A	N/A	N/A
HG7	total cumulative mercury feed	lbs	0	10	real	W	3	0.009	0	300	on	N/A	N/A	N/A
PB7	total cumulative lead feed	lbs	0	2000	real	W	3	0.009	0	300	on	N/A	N/A	N/A
SEMVOLRL	semi-volatile metals (HRA)	lb/hr	0	500	real	W	3	0.50	5	60	on	0.1	1	30
SEMVOL12	semi-volatile metals (12-hr RA)	lb/hr	0	500	real	W	1	0.50	5	60	on	0.1	1	30
LOWVOLRL	low volatile metals (HRA)	lb/hr	0	250	real	W	3	0.50	5	60	on	0.1	1	30

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LOWVOL12	low volatile metals (12-hr RA)	lb/hr	0	250	real	W	1	0.50	5	60	on	0.1	1	30
TOTHGRL	mercury feed rate (HRA)	lb/hr	0	10	real	W	3	0.50	5	60	on	0.1	1	30
TOTHG12	mercury feed rate (12-hr RA)	lb/hr	0	10	real	W	1	0.50	5	60	on	0.1	1	30